

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the lower bearing must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 4, 6, 7, are rejected under 35 U.S.C. 103(a) as being unpatentable over Ito et al (U.S Patent No. 5,357,834), hereinafter Ito, in view of Hurn et al (U. S Patent No. 5,850,698), hereinafter Hurn, in witness of Drake (U.S Patent No. 2,340,312).

Regarding claim 1, Ito teaches (see Figures 1-3) a miter saw (1) comprising a base (2) having a substantially horizontal turn-table/support surface (3), a work piece positioning fence (6) attached to the base (2), and a cutting assembly (21) pivotally attached to the miter saw. The cutting assembly is pivotable between a raised and a lowered position (see Figures 1 and 2). A motor (41) is drivingly connected to the arbor (33) of the saw blade (36) and configured so as to not contact any portion of the base or fence (6) when the mitering at least 45 degrees from a plane substantially perpendicular to the work piece positioning fence (see Figure 2; Col. 6, lines 1-20). The motor (41) has a motor shaft (42) with a longitudinal axis supported by a lower bearing (43) and a gear assembly (42a and 39) that transfers rotational motion from the motor shaft (42) to the arbor (33). A gear housing (32 and 35) covers the motor shaft, arbor, and gears, and has a lowermost exposed portion. The arbor (33) does not extend beyond the

motor shaft (42). The gear (39) connected to the arbor (33) is a bevel gear. A blade guard (31) surrounds the blade.

Drake teaches (Figure 2 and 3) that it is inherent in the design of an electric motor that the motor shaft (27 and 28) extends through the motor as this is required for the motor shaft to rotate do to the electromagnetic current created within the motor.

Figure 2 of Ito teaches similar structure without explicitly stating it.

Regarding claim 4, Ito teaches (see Figure 3) the gear housing/box (32 and 35) tapers in a direction of the base.

Regarding claim 7, Ito teaches (see Figure 1) the miter saw is a slide-type miter saw.

Ito teaches all of the elements of the current invention as stated above except the use of a gear assembly and a motor orientated substantially perpendicular to the arbor of the saw such that the longitudinal axis of the motor shaft intersects the lowermost portion of the gear housing when the cutting assembly is in the lowered position. Ito further fails to teach the lower most portion of the housing being higher than the arbor when the blade is substantially perpendicular to the horizontal support surface.

Hurn teaches (see Figure 2) orienting a motor (15) having a motor shaft with a longitudinal axis oriented substantially perpendicular to an arbor (21) in a circular saw while still not allowing the arbor to extend beyond the motor shaft. A gear assembly is used to transfer the rotational power of the motor to the saw blade (28). Hurn also teaches (Figures 2 and 3) a portion of a gear housing being behind the arbor (21) and

also being an exterior surface adjacent the flat surface of the shoe (300). A lowermost portion of the housing is intersected by the axis of the motor shaft.

It would have been obvious to have modified Ito to incorporate the teachings of Hurn to use an established method of transferring the rotational motion generated by the motor to the saw blade while still allowing the saw blade to bevel to the degree that was originally presented by Ito. These two motor configurations were art recognized equivalents at the time of the invention, and one of ordinary skill in the art would have no problem replacing the configuration of Ito with the configuration found in Hurn.

The combination of Ito and Hurn does not disclose the lowermost portion of the housing being above the arbor when the blade is oriented perpendicular to the horizontal support surface. However, Ito teaches the criticality of allowing the cutting assembly to pivot 45 degrees without contacting the positioning fence (Col. 6, lines 14-19) therefore an outer lowermost exposed portion directly below the motor shaft and closest to the support surface being above the arbor presents no novel or unexpected result over the motor/gear configuration and gear housing of Ito. Use of such a position of the lowermost exposed portion in lieu of the configuration used in Ito would be an obvious matter of design choice to one of ordinary skill in the art. Furthermore, it has been held that there would be no invention in changing the form or shape of an object if the operation of the device would thereby not be modified. In the instant case Ito already teaches allowing the cutting assembly to pivot 45 degrees without contacting the positioning fence and therefore the configuration of the instant invention is nothing more than one of numerous configurations one of numerous configurations a person of

ordinary skill in the art would find obvious. Therefore it would be an obvious matter of design choice to do so.

4. Claims 2, 3, 34, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over the modified device of Ito, as stated in section 3, view of Avakian (U.S Patent No. 3,611,859) or Allemann (U.S Patent No. 2,925,104).

The modified device of Ito teaches all of the elements of the current invention as stated above except for the gear assembly containing a helical and bevel gears as well as a jackshaft. The jack shaft being rotatably connected to the second bevel gear and a helical gear set disposed between the jack shaft and the motor shaft.

Avakian teaches (Col. 2, lines 20-27) a first helical gear that is mounted to a rotating shaft. The first helical gear rotates a second helical gear that is attached to a jack shaft. The jack shaft is attached to a bevel gear which drives a gear box.

Allemann teaches (see Figure 1) a first helical gear (22), which is mounted to a motor shaft (20) that drives a second helical gear (24). The second helical gear drives a jack shaft (26) that in turn rotates a second bevel gear (52) attached to the jack shaft (26). The second bevel gear (52) meshes with a first bevel gear (54) that is mounted to an arbor (50) to rotate a saw (46).

It would have been obvious to have modified the modified device of Ito to incorporate the teachings of Avakian or Allemann to incorporate a helical/bevel gear assembly with a jack shaft between each assembly for the purpose of transferring rotational motion generated by the motor, which is offset from the rotational axis of the saw, to the arbor and still allow the location of the motor to not interfere with the ability

of the saw to bevel. This would allow a user to move the motor, which could burn or shock a user if touched, away from any location that a user would normally touch on the saw.

5. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over the modified device of Ito, as stated in section 3, in view of Hollinger et al (U.S Patent No. 6,615,701), hereinafter Hollinger.

The modified device of Ito teaches all of the elements of the current invention as stated above except for a trunnion being disposed between the cutting assembly and the turntable so as to permit the cutting assembly to bevel with respect to the base.

Hollinger teaches (Col. 4, lines 50-51; also see Figure 4) a trunnion (32) mounted between the base and the cutting assembly.

It would have been obvious to have modified the modified device of Ito to incorporate the teachings of Hollinger to use a trunnion for the purpose of allowing the cutting assembly to easily be moved to different angular orientations with respect to the base so a user could use the saw to make a variety of different cuts.

Response to Arguments

6. Applicant's arguments filed 11/24/2009 have been fully considered but they are not persuasive.

Regarding the drawing objection, there appear to be multiple objects that could be bearings within the gear housing, as a bearing could conceivably be just a surface of another part. Other bearings can probably be found within the motor itself. Any of these bearings could be considered a lower bearing as applicant has not disclosed any

bearings or their purpose in the specification. Examiner asks applicant to specifically identify what is considered the lower bearing in an amendment to the drawings and specification.

Regarding Ito, examiner disclosed Ito failed to teach that "the longitudinal axis of the motor shaft intersects the lowermost portion of the gear housing when the cutting assembly is in the lowered position..." and "the lower most portion of the housing being higher than the arbor when the blade is substantially perpendicular to the horizontal support surface." However as stated above, Hum teaches a lowermost portion of the housing is intersected by the axis motor shaft. Furthermore, with regards to the location of the lowermost portion relative to the arbor, this limitation is an obvious design choice as discussed above.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Stumpf et al (U.S Patent No. 5,943,931), Brunson et al (U.S Publication No. 2001/0042429), Brunson (U.S Patent No. 6,474,206), Sasaki et al (U.S Patent No. 5,564,323), Bergler (U.S Patent No. 4,537,105), Itzov (U.S Patent No. 5,865,079), and Mckeage (U.S Patent No. 1,803,068) all teach miter saws including various elements of the disclosed invention.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ib whose telephone number is (571)272-5567. The examiner can normally be reached on Monday-Friday 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Boyer Ashley can be reached on 571-272-4502. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/E. F. L./
Examiner, Art Unit 3724
1/4/2010

/Boyer D. Ashley/
Supervisory Patent Examiner, Art Unit 3724